CLAIMS

1. A blood glucose and/or insulin secretion regulator comprising a CXCR3 ligand as an active ingredient.

2. An impaired glucose tolerance ameliorating drug comprising a CXCR3 agonist as an active ingredient.

3. The impaired glucose tolerance ameliorating drug of Claim 2, wherein the CXCR3 agonist is at least one selected from the group consisting of IP-10, Mig, I-TAC, BCA-1, modifications thereof and prodrugs thereof.

4. The impaired glucose tolerance ameliorating drug of Claim 2, wherein the CXCR3 agonist is at least one selected from the group consisting of IP-10, Mig, I-TAC, modifications thereof and prodrugs thereof.

5. The impaired glucose tolerance ameliorating drug of any of Claims 2 to 4, which is a therapeutic drug for lifestyle-related diseases.

6. The impaired glucose tolerance ameliorating drug of any of Claims 2 to 4, which is a therapeutic drug for diabetes.

7. A hypoglycemia ameliorating drug comprising a CXCR3 antagonist as an active ingredient.

8. A therapeutic drug for a disease that can be ameliorated by suppression of insulin secretion, which comprises a CXCR3 antagonist as an active ingredient.

9. An anti-obesity drug comprising a CXCR3 antagonist as an active ingredient.

10. A method of screening a CXCR3 ligand, which comprises bringing a test sample into contact with CXCR3 or a fragment thereof to which a ligand can bind, and selecting a compound that binds to said receptor or a fragment thereof.

11. A method of screening a CXCR3 ligand, which comprises bringing a known ligand into contact with CXCR3 or a fragment thereof to which a ligand can bind, in the presence and absence of a test substance, and comparing the binding activity of said receptor or fragment thereof and the known ligand under both conditions.

12. The screening method of Claim 10 or 11, wherein CXCR3 or a fragment thereof to which a ligand can bind is provided in the form of a lipid bilayer embedding same.

13. A method of screening a CXCR3 ligand, which comprises comparing, in a reaction system comprising a CXCR3-containing lipid bilayer and an α-subunit of a G protein capable of being coupled with CXCR3, the GDP-GTP exchange reaction of said subunit or the cell stimulating activity of said G protein, in the presence and absence of a test substance.

14. The screening method of Claim 13, wherein the reaction system is:
(i) a host eukaryotic cell transfected with an expression vector comprising a DNA that encodes CXCR3 and with an expression vector comprising a DNA that encodes the α subunit of a G protein capable of being coupled with CXCR3, (ii) a host eukaryotic cell transfected with an expression vector comprising a DNA that encodes a polypeptide consisting of CXCR3 and the α subunit of a G protein capable of being coupled with CXCR3 fused to the C-terminus side of CXCR3, (iii) a host

animal cell that endogeneously expresses a G protein capable of being coupled with CXCR3, which is transfected with an expression vector comprising a DNA that encodes CXCR3, (iv) an animal cell that endogenously expresses CXCR3 and a G protein capable of being coupled with CXCR3, a homogenate of the cell, or a membrane fraction derived from the cell.

15. The screening method of Claim 14, which comprises adding a GTP analogue to the reaction system in the presence and absence of a test substance, and comparing the binding of the α-subunit of the G protein capable of being coupled with CXCR3 and the GTP analogue under both conditions.

16. The screening method of Claim 14, wherein the α-subunit of the G protein capable of being coupled with CXCR3 comproses a region that interacts with adenylate cyclase.

17. The method of Claim 16, which comprises adding ATP to the reaction system in the presence and absence of a test substance, and comparing adenylate cyclase activity under both conditions.

18. The method of Claim 16, which comprises comparing the cAMP amount in the cells of (i) to (iv) above, in the presence and absence of a test substance.

19. The screening method of Claim 14, wherein the α-subunit of the G protein capable of being coupled with CXCR3 comprises a region that interacts with phospholipase Cβ.

20. The screening method of Claim 19, which comprises adding phosphatidylinositol-4,5-diphosphate to the reaction system in the presence and absence of a test substance, and comparing phospholipase Cβ activity under both conditions.

21. The screening method of Claim 19, which comprises comparing the amount of intracellular calcium ions in the cells of (i) to (iv) in the presence and absence of a test substance.

22. The screening method of Claim 16, which comprises comparing the expression level of a reporter gene under the control of a promoter region comprising the cAMP-responsive element in the cells of (i) to (iv), which further comprise an expression vector containing said reporter gene, in the presence and absence of a test substance.

23. The screening method of Claim 19, which comprises comparing the expression level of a reporter gene under the control of a promoter region comprising the TPA-responding element in the cells of (i) to (iv), which further comprise an expression vector containing said reporter gene, in the presence and absence of a test substance.

24. The screening method of any of Claims 13 to 23, which is performed in the co-presence of a known ligand.

25. A blood glucose and/or insulin secretion regulator comprising a CXCR3 ligand selected by the method of any of Claims 10 to 24 as an active ingredient.

26. An impaired glucose tolerance ameliorating drug comprising a CXCR3 agonist selected by the method of any of Claims 10 to 24 as an active ingredient.

27. The impaired glucose tolerance ameliorating drug of Claim 26, which is a therapeutic drug for lifestyle-related diseases.

28. The impaired glucose tolerance ameliorating drug of Claim 26, which is a therapeutic drug for diabetes.

29. A hypoglycemia ameliorating drug comprising a CXCR3 antagonist selected by the method of any of Claims 10 to 24 as an active ingredient.

30. A therapeutic drug for a disease that can be ameliorated by suppression of insulin secretion, which comprises a CXCR3 antagonist selected by the method of any of Claims 10 to 24 as an active ingredient.

31. An anti-obesity drug comprising a CXCR3 antagonist selected by the method of any of Claims 10 to 24 as an active ingredient.

32. A diagnostic method for type II diabetes, which comprises measuring a CXCR3 ligand or a transcript of a gene of said ligand in a biological sample using an antibody possessing specific affinity for the physiological ligand for CXCR3 or a nucleic acid that encodes said ligand or a nucleic acid hybridizable with said nucleic acid under stringent conditions.

33. A diagnostic reagent for type II diabetes, which comprises an antibody possessing specific affinity for a physiological ligand for CXCR3 or a nucleic acid that encodes said ligand or a nucleic acid hybridizable with said nucleic acid under stringent conditions.